

U.S. Fish & Wildlife Service



K-12 Curriculum Guide

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National Wildlife Refuge System
1011 E. Tudor Road
Anchorage, Alaska 99503

K-12 Curriculum Guide

Fires burn thousands of acres in Alaska each year. Because fire's affect all Alaskans, it is important that everyone understands the "Role of Fire in Alaska." Fires caused by lightning are a natural part of the boreal forest and tundra ecosystem. They help maintain a diversity of vegetation ages and types, providing habitat for a greater abundance and diversity of wildlife.

This curriculum has been developed to help teach Alaskans about the role of fire in the boreal forest and tundra ecosystem. Although these two ecosystems are treated as separate units, it is important to emphasize that forest and tundra areas are often found mixed together throughout the state

This curriculum contains three different sections. They each contain lesson plans and background information on both tundra and boreal forest ecosystems. They are arranged as follows:



FOREST AND TUNDRA ECOLOGY



FIRE'S EFFECTS ON THE ECOSYSTEM



FIRE MANAGEMENT

A glossary, literature, related links, and Alaska State Content Standards are provided, and can be accessed from the left side of your web screen or at the end of the printed document. This curriculum is available on the website for the Alaska Region of the U.S. Fish and Wildlife Service (<http://alaska.fws.gov>).

This curriculum was revised from the 1992 "Role of Fire in Alaska" curriculum to provide additional information for teachers. The curriculum borrows ideas and teaching techniques from many sources, such as the Alaska Wildlife Curricula. Each lesson now identifies the Alaska State Content Standards that are addressed, and provides grade levels, skills, setting, the duration of exercise, group size, and vocabulary.

Reference material for this curriculum are generally included within this website. However, a box of reference materials can be borrowed from the Fish and Wildlife Service. Please contact your nearest National Wildlife Refuge System office for information or call the Alaska Resource Library and Information Service (ARLIS) at 907-272-7547.

Conceptual Outline

The following lists the concepts targeted in this curriculum by unit.

Unit I: Forest and Tundra Ecology

- Teachers' Background information
- Location of ecosystems in Alaska
- Non-living characteristics of each
- Living characteristics of each
- Identification of living things via dichotomous keys
- Food chains, food webs, producers, and consumers
- Wildlife population dynamics
- Natural agents of change boreal forest and tundra ecosystems
- Boreal forest succession
- Importance of vegetation mosaic to wildlife diversity
- Field trip ethics
- Use of a Field Notebook

Unit II: Fires Effects on the Ecosystem

- Teachers' Background information
- Fire triangles
- Types and characteristics of fuels in both ecosystems
- Types and characteristics of surface, ground and canopy fires
- Fire intensity
- Physical characteristics that affect fire intensity
- Fire impact on an ecosystem
- Fire effects on wildlife
- Fire effects on people
- Examination of a burn site

Unit III: Fire Management

- Teachers' Background information
- Fire effects on communities
- Why fires are managed
- How fires are managed
- Fire management issues
- Alaska Management Action Categories
- Public attitudes influencing fire management
- Informed decision-making
- Dilemmas in fire management
- Fire Plans and Defensible Space

Acknowledgments

This revised curriculum still contains most of the content and lessons developed from the curriculum. Janet Ady, Beverly Farfan, Heather Johnson, Pam Nelson, Sue Quinlan, Karen McKibbin, Cathy Rezabeck were the original authors and editors. They deserve credit for their work in developing a comprehensive curriculum. This revision could not have been completed without the support of Larry Vanderlinden and the editing work of Jennifer Coggins, Mary Timm, Karen Murphy and others. Harvey Heffernan, Lynette Nakazawa and Janna Taylor helped create the maps that appear in this curriculum. Kathy Sarns Irwin revised the artwork and Rose Primmer completed the layout, design and made the curriculum website compatible.

How to Use This Curriculum

Alaska forest and tundra fires burn thousands of acres each year, affecting Alaskans throughout the state. Whether these fires are a result of natural events, prescribed burns, or human accident, they effect Alaska's ecosystems, wildlife, and economy. This curriculum was designed to help Alaskan students learn about the role of fire in boreal forest and tundra ecosystems.

Role of Fire is divided into 3 units: 1) Forest and Tundra Ecology, 2) Fire Effects on the Ecosystem, and 3) Fire Management. Each unit begins with introductory teacher background pages that provide general information for that section. Additionally, activities may include a background section specific to the concept taught within.

This is a supplemental guide making it possible to add it to any part of your existing curriculum. Each lesson includes a planning box that correlates the activity to the Alaska State Content Standards, and includes grade levels, subjects, skills, duration, group size, setting, and vocabulary.

A glossary, reference literature, related links, and an index of Alaska State Content Standards are provided. They can be accessed from the left side of your web screen or at the end of the printed document.

Website Tips!

Quickest Viewing: In order to make this curriculum accessible on the web, it has been necessary to segment each unit so that it will download in reasonable time. Viewing the lessons directly on your screen is the fastest way to see the curriculum contents; however, some handouts and maps will only be seen if you select the blue link to view them.

Printing: There are 3 ways to print lessons in this curriculum.

1. Print directly from the website by selecting the "Printable Version" icon at the end of each lesson (this will remove the left bar from the page.) This is the quickest way to print, but you may not have page breaks occur at convenient places. Remember that you will have to print the handouts that are links within the website separately!
2. Print the lesson, and corresponding handouts, from the PDF files. These files are shown following the lesson title on the Table of Contents page for each unit. The links to the handouts appear in blue.
3. Print the "Complete Lesson" these PDF files include the lesson and all of the relevant handouts. They are often very large files so they may be hard to download!